

## CLAIMS

We claim:

- 5                   1.       In an air ionizer apparatus comprising an air inlet, a high voltage source, an electrode electrically connected to the high voltage source for generating ions, an air outlet and an air mover for causing air to flow into the air ionizer through the air inlet, around the electrode and out of the air ionizer through the air outlet, wherein the improvement comprises:
- 10                         a foraminous filter comprising an electrically conductive material, the filter being electrically coupled to at least one of a voltage source and ground, the filter being positioned over at least one of the air inlet, the air outlet and the electrode, such that air flowing into the air inlet, air flowing out of the air outlet of air flowing past the electrode flows through the filter.
- 15                   2.       The air ionizer as recited in claim 1, wherein the filter is positioned over the air inlet and is electrically coupled to ground for removing positive and negative ions from the air flowing into the air ionizer.
- 20                   3.       The air ionizer as recited in claim 2, wherein the filter comprises a metal screen.
- 25                   4.       The air ionizer as recited in claim 1, wherein the filter is positioned over the air inlet and is electrically coupled to a voltage source for preventing existing voltage offsets in the air of the surrounding environment from flowing into the air ionizer.
- 30                   5.       The air ionizer as recited in claim 4, wherein the voltage source which is electrically coupled to the filter comprises one of a direct current voltage and a control loop voltage.
6.       The air ionizer as recited in claim 4, wherein the filter is comprised of a metal screen.

7. The air ionizer as recited in claim 1, wherein the filter is positioned over the air outlet and is electrically coupled to ground for removing unwanted positive and negative ions and ionization noise from ionized air flowing out of the air ionizer through the air outlet.

5 8. The air ionizer as recited in claim 7, wherein the filter comprises a metal screen.

9. The air ionizer apparatus as recited in claim 1, wherein the high voltage source comprises a high voltage direct current power supply and wherein the filter is positioned  
10 over the air outlet and is coupled to a direct current voltage source for reducing noise ions from the ionized air flowing out of the air ionizer through the air outlet and for controlling the direct current balance of the ionized air flowing out of the air ionizer.

10 11. The air ionizer as recited in claim 9, wherein the filter comprises a metal  
15 screen.

11. The air ionizer as recited in claim 9, further comprising a sensor at the air outlet for sensing ion content of the outlet air, the sensor providing a feedback voltage for  
20 controlling the output of the high voltage direct current power supply.

12. The air ionizer as recited in claim 9, further comprising a sensor at the air outlet for sensing ion content of the outlet air, the sensor providing a feedback voltage for  
25 controlling the direct current voltage source coupled to the filter.

13. The air ionizer as recited in claim 1, wherein the high voltage source comprises a high voltage alternating current power supply and wherein the filter is positioned  
30 over the air outlet and is coupled to a direct current voltage source for reducing noise ions from the ionized air flowing out of the air ionizer and for controlling the direct current balance of the ionized air flowing out of the air ionizer.

14. The air ionizer as recited in claim 13, wherein the filter comprises a metal screen.

15. A method of removing ions from air flowing into an air ionizer having an air inlet, a high voltage source, an electrode electrically connected to the high voltage source for generating ions, an air outlet and an air mover for causing air to flow into the air ionizer through the air inlet, around the electrode and out of the air ionizer through the air outlet, the method comprising the steps of:

placing a foraminous filter comprising an electrically conductive material over the air inlet; and

coupling the filter to one of a voltage source and ground.

16. The method as recited in claim 15, wherein the filter comprises a metal screen.

17. A method for removing unwanted ions and ionization noise from ionized air flowing out of an air ionizer, the air ionizer having an air inlet, a high voltage source, an electrode electrically connected to the high voltage source for generating ions, an air outlet and an air mover for causing air to flow into the air ionizer through the air inlet, around the electrode and out of the air ionizer through the air outlet, the method comprising the steps of:

placing a foraminous filter comprising an electrically conductive material over the air outlet; and

coupling the filter to one of a voltage source and ground.

18. The method as recited in claim 16 wherein the filter comprises a metal screen.

19. A method of removing ions from air flowing into an air ionizer having an air inlet, a high voltage source, an electrode electrically connected to the high voltage source for generating ions, an air outlet and an air mover for causing air to flow into the air ionizer through the air inlet, around the electrode and out of the air ionizer through the air outlet, the method comprising the steps of:

placing a foraminous filter comprising an electrically conductive material around the electrode; and

coupling the filter to one of a voltage source and ground.

20. The method as recited in claim 19, wherein the filter comprises a metal screen.

21. In an air ionizer apparatus comprising an air inlet, a high voltage source, an electrode electrically connected to the high voltage source for generating ions, an air outlet and an air mover for causing air to flow into the air ionizer through the air inlet, around the electrode and out of the air ionizer through the air outlet, wherein the improvement comprises:

a foraminous filter comprising an electrically conductive material, the filter being electrically coupled to one of a voltage source and ground, the filter being positioned on an interior surface of the air ionizer apparatus, such that at least a portion of the air flowing pass the electrode engages the filter.

22. The air ionizer apparatus as recited in claim 21 wherein the filter comprises a metal screen.

23. A method of removing unwanted ions from air flowing out of an air ionizer, the air ionizer having an air inlet, a high voltage source, an electrode electrically connected to the high voltage source for generating ions, an air outlet and an air mover for causing air to flow into the air ionizer through the air inlet, around the electrode and out of the air ionizer through the air outlet, the method comprising the steps of:

placing a foraminous filter comprising an electrically conductive material over an interior surface of the air ionizer apparatus proximate to the electrode; and

coupling the filter to one of a voltage source and ground.

24. The method as recited in claim 23 wherein the filter comprises a metal screen.